Letters

TWIDDLER'S SYNDROME

Editor,

A 38 year old lady with a history of dilated cardiomyopathy with severe impairment of left ventricular systolic function and non-sustained ventricular tachycardia on Holter monitoring underwent implantation of a dual chamber implantable cardioverter defibrillator (ICD) for primary prevention of sudden death.

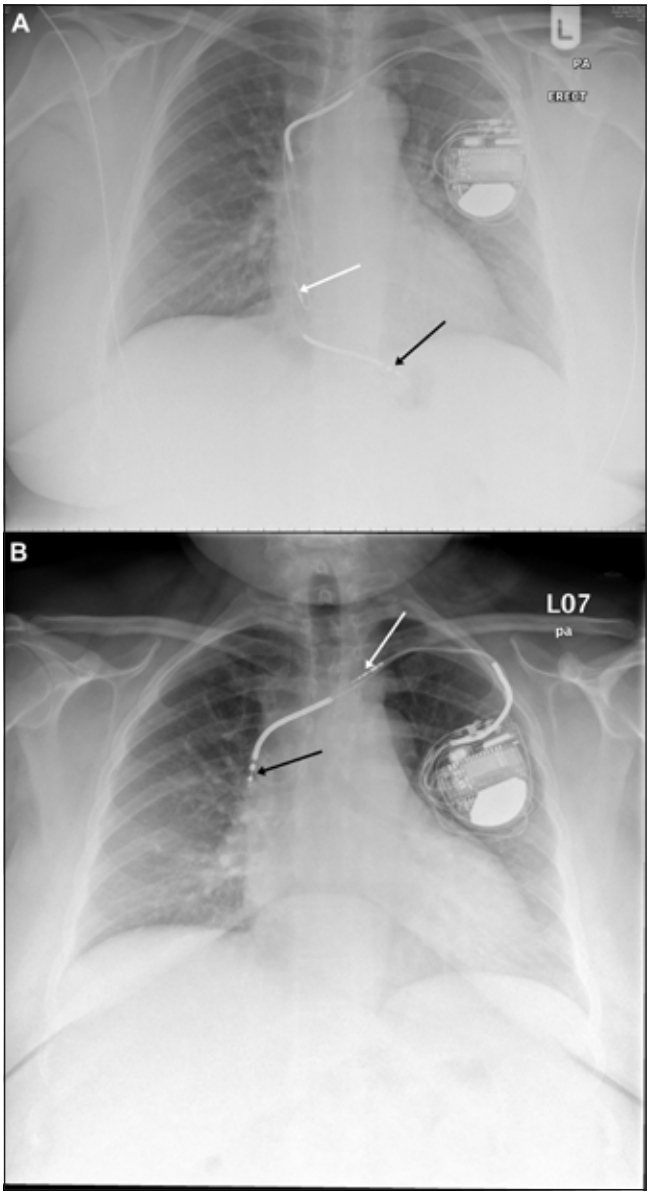

Fig 1. Panel A: Chest X-ray one day after implantable cardioverter defibrillator (ICD) implantation demonstrating satisfactory position of atrial lead (white arrow) and ventricular lead (black arrow). Panel B: Chest X-ray four weeks after ICD implantation demonstrating retraction of atrial lead (white arrow) and ventricular lead (black arrow) and loops of redundant lead in the region of the ICD generator.

An Evera XT DR ICD generator (Medtronic, Minneapolis, Minnesota) was placed in a left pre-pectoral subcutaneous pocket. A Sprint Quattro dual coil active fixation ICD lead (Medtronic, Minneapolis, Minnesota) was placed at the right ventricular apex and a CapSureFix active fixation lead (Medtronic, Minneapolis, Minnesota) was placed in the right atrium. Chest X-ray (Figure 1) and device parameters were satisfactory the following day and the patient was discharged.

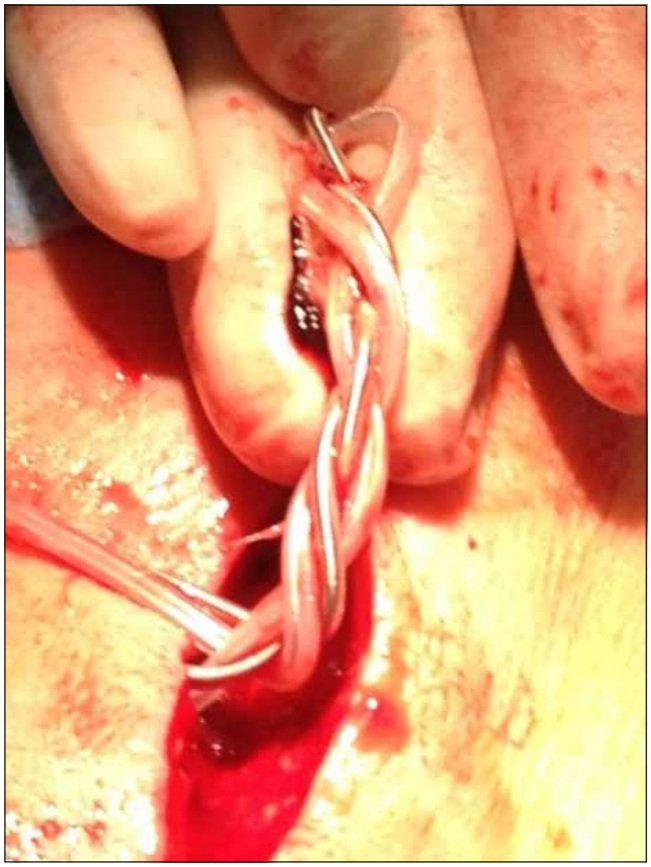

Fig 2. Image taken during ICD system explant demonstrating a large collection of entangled leads.

She presented to the accident and emergency department four weeks after ICD implantation complaining of chest pain and shortness of breath. A chest X-ray at that time revealed marked lead displacement, with the distal tip of the ICD lead in the superior vena cava and the distal tip of the atrial lead close to the left subclavian vein. In addition, there were a number of loops of redundant lead in the region of the ICD generator, in excess of that observed on the chest X-ray early after implantation (Figure 1). Device interrogation revealed no sensing of intra-myocardial electrical activity and inability to capture the myocardium at maximum output on both leads. These findings were felt to be secondary to manipulation of the device by the patient, a phenomenon known as Twiddler's syndrome. The patient proceeded to ICD system explant. During the procedure a large collection of entangled leads was found within the pocket (Figure 2), confirming Twiddler's syndrome.

Twiddler's syndrome represents pacemaker or ICD

malfunction as a consequence of patient manipulation, usually by way of repeated rotation of the generator within the sub-cutaneous pocket. This results in entanglement of the leads causing lead retraction and device malfunction. The syndrome was first described in 1968[1]. Patient related risk factors include obesity and advanced age; both increase the likelihood of loose sub-cutaneous tissue and therefore make manipulation of the generator within the pocket easier[2]. Lead retraction may lead to stimulation of non-cardiac structures such as the diaphragm and muscles of the chest wall[3]. Management of Twiddler's syndrome usually involves re-positioning of the leads, additional securing of the generator to the sub-cutaneous pocket or placement of the generator within a sub-pectoral pocket and patient education to avoid this behaviour in the future. In the present case the leads were not repositioned because of concerns regarding a recurrence of the causative behaviour.

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COST IMPLICATIONS OF UNNECESSARY COAGULATION SCREENS IN SURGICAL PATIENTS – A MULTI-CENTRE STUDY

Editor,

Coagulation screens in surgical patients are routinely requested, often inappropriately. This can delay surgery, and cause unnecessary concern for the patient.[1] It is also associated with a significant cost to the hospital concerned, and often does not alter management. Coagulation screens in the two district general hospitals involved in this study cost £4.81 and £7.07 respectively. We performed five sampling periods of surgical inpatients in two district general hospitals, comparing with local and NICE guidelines[2], to establish if coagulation screen requests were appropriate and to identify cost implications. Both elective and emergency patients were included in the study.

Local guidelines for requesting a coagulation screen include a personal history suggestive of a bleeding disorder, acute bleeding with clinically suspected coagulopathy, patients with liver disease or chronic renal impairment whom require an invasive procedure, obstructive jaundice, severe sepsis, and paracetamol overdose.

NICE guidelines[2] for pre-operative assessment of patients state there is no indication for routine coagulation preoperatively for any type of surgery, from Grade 1 – minor, to Grade 4 – major+. A coagulation screen should only be performed if clinically indicated.

All coagulation screen requests in surgical inpatients over two to five week periods were analysed and compared with local and NICE Guidelines. Medical notes and laboratory results were reviewed to determine whether or not the coagulation requests were appropriate. This was repeated five times over a 4-year period (15 weeks in total) in two district general hospitals.

343 coagulation screen requests were made over the five audit periods. Only 36.7% requests were indicated as per guidelines. Inappropriate requests included: routine at admission, pre-operative, pre-procedure bloods (53.9%), radiology requests (6.5%), repeated samples (5.1%), patients on warfarin (1.4%), and no documented reason (33.2%). Interestingly, only 3 unexpected coagulopathies were found (1.38%), which did not alter the management of the patient. Over the five sampling periods, the total cost of inappropriate coagulation screens performed to the two hospitals concerned was £1095.75.

These data show, despite guidelines, there are a large number of unnecessary coagulation screens performed. Extrapolating our data over the 4-year study period, approximately £13,934.57 is spent on inappropriate coagulation screens. It would be helpful if a summary of these data with the indications for requesting a coagulation screen were reinforced with each change-over of medical staff, especially during the induction period of new F1 doctors.

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POST OPERATIVE RECOVERY TIME: AN INTERNATIONAL SURVEY OF ENT SURGEONS ADVICE.

Editor,

Ill health in workers cost the UK tax payer £14.2 billion in 2013[1]. While the majority of these cases are related to long term incapacity a small percentage will be due to those convalescing after a wide number of procedures. One of the most frequently asked questions peri-operatively is "how long will I be off work?" and part of our role is to create realistic

expectation for recovery time. The advice given to patients is frequently based upon personal experience rather than firm scientific evidence. In addition, the development of innovative surgical techniques has meant that the traditional teachings with regard to time taken for convalescence following surgery are somewhat outdated[2].

ENT UK provides a selection of leaflets for common ENT procedures which include details on expected recovery times[3]. Anecdotal evidence suggests that there is a degree of variability in the advice given by individual surgeons and departments across the country. We aimed to assess the variability in advice given by surgeons in the United Kingdom (UK) and the Republic of Ireland (RoI) using an internet based questionnaire. Surgeon grade and location as well as post operative recovery time advised was collated for eight routinely performed procedures.

Questionnaires were sent to 48 surgeons in the UK and 32 surgeons in the RoI. A response rate of 15/32 (47%) in the RoI and 29/44 (65%) in UK was obtained. Respondents consisted of 56% consultant grade, 21% specialist registrar (SPR), 19% senior house officer (SHO) and 4% staff grade. The main centres responding were Belfast (23%), Craigavon (20%), Antrim (16%), Dublin (14%) with smaller contributions from Derry, Cork, Waterford, Sligo and Galway.

The average recommended time off following tonsillectomy was 13.8 days (7-28), tympanoplasty 10.8 days (3-28), thyroid lobectomy 13.2 days (5-42), Microlaryngoscopy 3.6 days (0-7), Oesophagoscopy was 2.1 days (0-7), Septoplasty 10.8 days (1-28), Functional Endoscopic Sinus Surgery 11.1 days (3-42), Bilateral Myringotomy and Vent 1.5 days (0-7). The majority of departments recommended similar periods of time for patient convalescence however a few had significantly different recommendations. The longest recovery periods were recommended by staff grades recommending an average of 16 days off across all procedures, with SHO's, SPR's and consultants recommending a period of 7.5, 8 and 8 days off respectively. This may reflect the closer supervision of junior staff and as a result post operative instructions given by junior staff may simply be an indirect version of the consultants advice. While consultant advice was generally similar across all the departments surveyed, smaller peripheral units had a wider variation in the recommendations provided than central teaching hospitals.

In conclusion we found that the average time recommended for post operative recovery across ENT surgeons in both the RoI and UK is very similar to that which is recommended by ENT UK. There is however wide variations both between departments and between different grades of doctors. This may reflect regional variations in patient expectations or indeed the different levels of doctors' experience and supervision. There is limited information in the literature regarding post operative recovery time from both the doctor and the patients perspective. This likely represents the vast differences in both the procedures carried out and the fitness of the patients undergoing these procedures. Despite this, it is essential to have some degree of standardisation regarding post operative recovery times for common procedures in all surgical specialities. The provision of consistent and adequate information to both patients and general practitioners ensures appropriate recovery time is received by the patient, potential unseen complications are detected and unnecessary cost to employers is avoided.

The authors have no conflict of interest.

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RIVAROXABAN ASSAY: A SINGLE CENTRE EXPERIENCE MEASURING RIVAROXABAN LEVELS WITH A SPECIFIC ANTI XA ASSAY AND THE EFFECT ON THE STANDARD COAGULATION SCREEN.

Editor,

Traditional anticoagulants including Vitamin K antagonists (VKA), unfractionated heparin (UFH) and Low Molecular Weight Heparins (LMWH) have been in use in clinical practice for a long period of time. Each have readily encountered limitations from their route of administration, need for monitoring with narrow therapeutic windows as well as their complications including heparin induced thrombocytopenic thrombosis.

Rivaroxaban inhibits free factor Xa and hence prothrombinase activity as well as clot bound Xa, thus effectively blocking thrombin generation. One advantage over VKA is that blood coagulation monitoring is not necessary. However introducing a static change into a dynamic cascade always raises concern. The concentration may **potentially** need to be measured in certain clinical situations. These may include urgent surgery, perioperative management, thromboembolic events, bleeding events and suspected overdose.

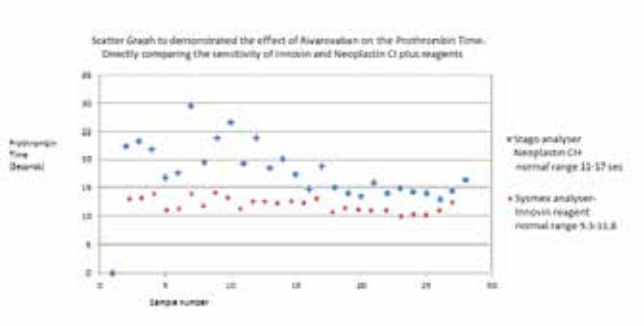
We performed a study to assess the effect of rivaroxaban on the current coagulation screen to help aid clinicians in making decisions as and when these circumstances arise. All routine coagulation screens through Northern Ireland are undertaken on a Sysmex Coagulaometer using the Innovin reagent. The Regional Specialty Coagulation Laboratory uses a Stago analyser and the STA Neoplastine CI+ reagent.

By taking thirty samples from patients on rivaroxaban,

recording the dose and time from last drug ingestion we were able to measure the effect on the standard coagulation screen with both analysers. On the same samples the rivaroxaban concentration was measured with the specific anti-Xa rivaroxaban assay.

RESULTS

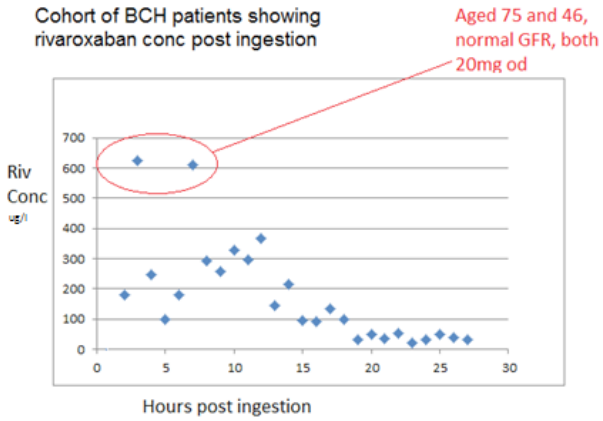
The effect on the PT and APTT was variable between analysers. The PT, in line with previous publications, was more sensitive than the APTT at smaller drug concentrations.



The Neoplastine CI plus reagent on the Stago analyser was more sensitive than the Innovin reagent to rivaroxaban concentrations.

The Neoplastine CI PT was prolonged in all samples taken within 17 hours of rivaroxaban ingestion.

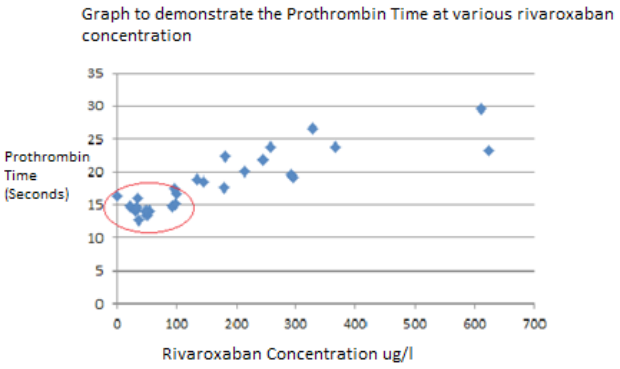
On each of the samples we ascertained the rivaroxaban concentration with a manufacturer's specific anti Xa reagent. As a control, healthy volunteers on no anticoagulation had their rivaroxaban levels measured. The volunteers' rivaroxaban levels ranged from 15-21ug/l and therefore we assume no drug is present when levels fall into, and below, this range.



Our results compare with University Hospital Hotel Dieu (Paris) which found peak concentrations up to 400ug/l and trough concentrations up to160ug/l.

However as you can see from our results two patients have a higher rivaroxaban level than expected. These patients were also taking verapamil. We noted the SPC advises rivaroxaban not to be used in patients who are receiving concomitant combined P-gp and moderate CYP3A4 inhibitors unless the potential benefit justifies the potential risk.2

There is a positive correlation between rivaroxaban concentration and Neoplastine CI PT reagent with prolongation up to a certain concentration and beyond this the effect on Neoplastine CI PT appears to plateau.



This may indicate that higher doses particularly in overdose or co prescribed CYP3A4 inhibitors may not necessarily have a directly proportional additional anticoagulant side effect.1

CONCLUSION

There is a choice of laboratory tests available to aid clinicians when it is necessary to measure rivaroxaban. Rivaroxaban anti Xa assay will quantify the drug concentration however turnaround time is within four hours. The PT, provided it is sensitive to rivaroxaban, is a quicker test and may be useful to ascertain rivaroxaban presence. However given the demonstrated plateau effect on PT at higher rivaroxaban concentrations, the PT will not give reassurance that levels are not excessive. Although smaller amounts of rivaroxaban(<100ug/l) may still be present when the PT is normal its clinical significance and its anticoagulant ability needs to be judged on a case by case basis.

The tests must be interpreted with timing of blood sample to drug ingestion making reference to known drug pharmacokinetics being mindful that assessment of the sensitive PT may be normal if checked within two hours from ingestion.

Decisions need to be made as to how this information is disseminated throughout the routine coagulation laboratories and whether the reagent current utilised needs changing in light of these findings.

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INFLUENCE OF ETHNIC ORIGIN ON VZV SEROPREVALENCE IN WOMEN OF CHILD-BEARING AGE.

Editor,

Chickenpox is estimated to complicate 0.7–3/1,000 pregnancies in the UK[1] with potential for severe adverse consequence to both mother and baby. Susceptibility to chickenpox can be assessed by IgG testing although this is not currently done as part of routine antenatal screening in UK. Less than 10% of women of child bearing age in Northern Ireland are susceptible to chickenpox[2] however this may vary on basis of ethnic and geographical origin. The ethnic and geographical origin of the Northern Ireland population has changed over recent decades and we wished to investigate the effect of ethnic origin on VZV seroprevalence locally using names as an indicator of likely ethnicity/geographical origin.

We reviewed Northern Ireland laboratory test requests for the time period from January 2008 to April 2015. The criteria for inclusion in the analysis were: age 16-40, female, known test result, full name recorded on test request. A total of 15,471 blood samples tested routinely for VZV IgG fulfilled these inclusion criteria.

Categorisation of names and surnames by presumed geographical origin was performed by a Medical Microbiology registrar from Belarus who had good familiarity with Eastern European names. The names were allocated to 3 groups **Group A**: Asia, Africa and Middle East **Group B**: Baltic and Eastern European, and **Group C**: UK and Western European.

Of the 15,471 blood samples, 14818 (94.1%) were categorised as Group C while Group A and B accounted for 1.6% and 2.6% of the samples respectively. Results are shown in Table 1.

Group	Non immune (negative or equivocal) / total tested (% seronegative)
Group A Asia, Africa or Middle East	51/246 (20.73%)
Group B Baltic and Eastern European	55/407 (13.51%)
Group C UK/Western European	1324/14818 (8.9%)

The proportion of non-immune samples was significantly lower in the group C samples and was highest in Group A (χ^2 test $p< 0.00001$).

These data demonstrate that varicella non-immune rates in our local population vary with ethnic/geographical origin.

The higher proportion of non-immune patients in Group A is in accordance with previously reported evidence of lower varicella seroprevalence in people brought up or living in tropical areas.[3] This has been suggested as being related to climatic differences in humidity and temperature that may affect virus survival and transmission.[4] However it is rather more difficult to postulate a mechanism for reduced seroprevalence in Eastern European female population compared to the rest of Europe. Socioeconomic and social contact factors may play a role in explaining differing varicella transmission dynamics in different European countries but this has proven difficult to elucidate.[5]

It is important to consider differences in immunity rates within populations when modelling health economic approaches to antibody screening and/or vaccination to prevent the consequences of varicella infection in pregnancy as thresholds for intervention may vary with ethnic/geographical origin.

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CHEMICAL BURN FROM CONTACT WITH SCRUBBING SOLUTION

Editor,

Following hand washing with Videne surgical scrub prior to administration of a spinal anaesthetic, sterile gloves were worn for approximately 20 minutes. Symptoms of itch and irritation between middle and index fingers were noticed within two hours then progression to a delineated raised erythematous area within 24 hours. Figure 1. Extensive blister development occurred over the next 48 hours. Figure 2. There was no contact with any other substances and no previous history of skin sensitivity or allergy. Following attendance at Accident and Emergency and review by the burns clinic, a diagnosis of chemical burn in the interdigital area was made.

This was presumed to be caused by incomplete rinsing of the fingers, leaving a thin film of Videne in contact with the skin

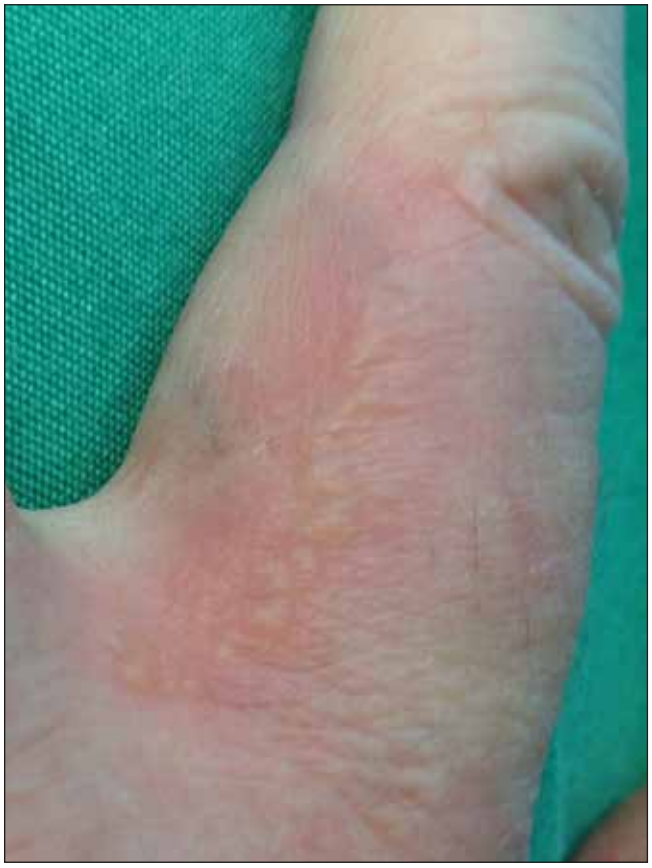

Fig. 1.

Videne surgical scrub is commonly used for pre-operative hand cleansing, or for disinfecting the incision site prior to surgery. It is manufactured by Ecolab Ltd. as an antiseptic solution and offers activity against a broad range of bacteria, viruses, fungi and some bacterial spores. [1]

Videne contains 7.5% w/w Povidone-Iodine which gives 0.75% w/w available Iodine. It is a dark brown solution similar to Bethadine, but with a variation of excipients. This results in a difference in pH of 3-5.5 (Videne) compared with pH 4-6 (Bethadine). The presence of the aluminium salt of alkylphenol ether in Videne has been suggested as the reason why Videne may be more irritant than Bethadine. [2]

Manufacturer's advice for preoperative surgical scrub is to apply approximately 3.5ml of Videne after first wetting the hands and arms with water. The Videne is then rubbed thoroughly onto these areas. A brush may be used to scrub the nails. A little water is then added to develop a lather and finally, this is rinsed off with running water [3]. Side effects are rare, but include skin reactions in Iodine sensitive patients. Both allergic and irritant contact reactions to Povidone iodine are recognised in patients. Such reactions can cause redness, induration and multiple small blisters.

Povidone-iodine in the form of Bethadine antiseptic solution has been reported to cause a chemical burn in an eight year old boy undergoing appendicectomy. The proposed mechanism was irritation from iodine coupled with maceration, pressure and friction[4].

The Pennsylvania Patient Safety Authority reports similar cases of patient burns following Bethadine application, caused by pooling of the solution beneath the patient, in intertriginous creases, or around the drapes during the surgical procedure.[5]

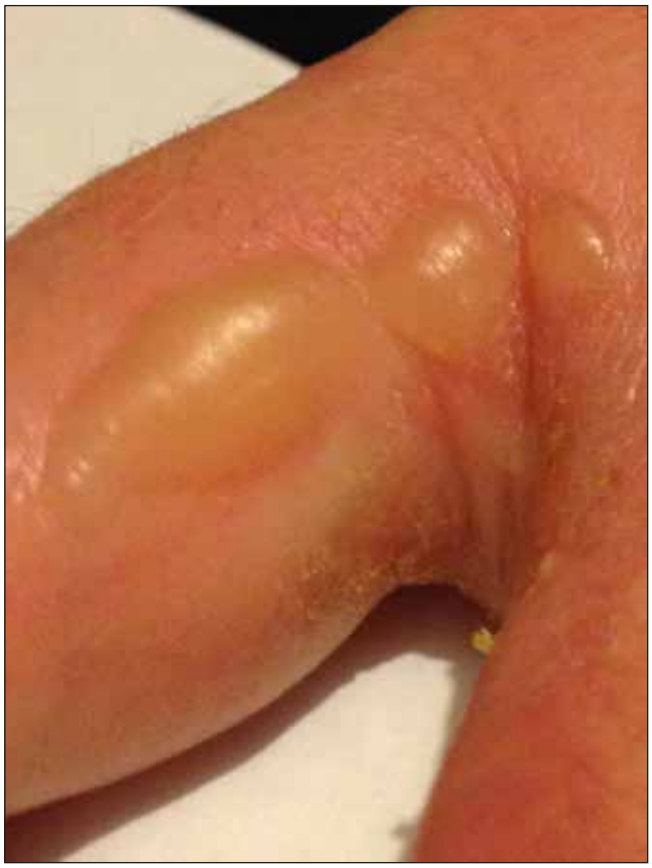

Fig. 2.

This case was unusual in that the burn developed after a short exposure time i.e. about 20 minutes, and it affected the anaesthetist rather than the patient. There was no obvious collection of Videne in the glove and therefore the volume of solution responsible for the burn must have been quite small. When the manufacturer's helpline was contacted, there were no previous reports of such injury among medical personnel.

On the advice of Occupational Health, direct patient contact was avoided until the blisters had dried completely which took approximately one week. This case serves as a reminder of the irritant nature of scrubbing solution to operating theatre personnel, following even short periods of skin contact and the importance of complete rinsing of the skin before applying surgical gloves.

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MESOTHELIAL INCLUSIONS MASQUERADING AS METASTATIC CARCINOMA.

Editor

A 35 year old female presented with a two week history of exertional breathlessness, cough and hoarseness with no reported weight loss, night sweats or fever. The patient underwent a chest x-ray and subsequent CT examination which illustrated a large right paratracheal mass.

The patient underwent a number of radiologically guided CNBs and despite raising the possibility of a diagnosis of CHL a definitive diagnosis was not possible due to the poor representation of tumour in limited tissue samples

Biopsies obtained by thoracotomy from an internal mammary artery LN and anterior mediastinal LN were submitted and felt to represent sampling from metastatic carcinoma due to a population of abnormal single epithelioid cells which were found in LN sinuses. A panel of immunohistochemistry demonstrated strong positivity of these cells with CAM 5.2, CK7 and diffuse weak positivity with ER. The cells were negative with PAX 8, TTF1, CK20, CDX2, CD68 and CD30. The morphological appearances and immunophenotype favoured a breast or upper gastrointestinal primary origin.

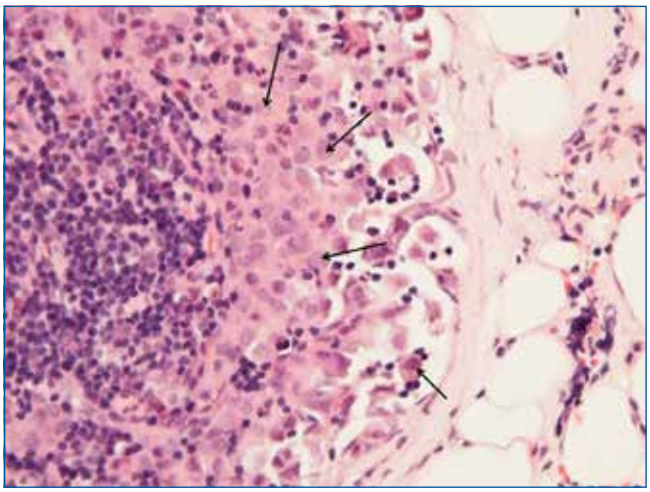

Fig 1

Extensive imaging failed to identify an occult primary carcinoma and it only became apparent at the MDT that the samples did not correspond to radiological sites of disease. Pathological review of the mediastinoscopic biopsies led to the correct identification of a rare but benign entity which can be seen when sampling LNs from the mediastinal region (mesothelial inclusions). Further immunohistochemistry performed demonstrated positivity of the epithelioid cells with WT1 and calretinin, confirming that they were indeed mesothelial in origin. Three months after the initial diagnostic procedure a final larger CNB of the mediastinal mass confirmed the previous suspicion of NSCHL. The patient has since finished the standard regime of ABVD and is currently asymptomatic and in remission.

Primary mediastinal lymphomas are most frequently of three histological varieties; NSCHL, PMBCL and lymphoblastic lymphoma. Mediastinal B cell lymphoma occurs in the third to fifth decade with a female predominance. Approximately 60% of all CHL and 20% of NHL involves the mediastinum at presentation.[1] Interestingly there are clinicopathologic and molecular similarities between PMBCL and NSCHL.[2] In addition, distinguishing CHL from PMBCL can be challenging as some patients have overlapping histological features similar to CHL and PMBCL.[3] Diagnosis is further hindered as the diagnostic RS cells in CHL range from 1-10% of all cells and may not be represented in a limited sample. Therefore it is important to have adequate tissue for morphological assessment as treatment is disease specific.

This was a complex case due to a number of factors. There are multiple possible pathologies which involve the mediastinum and even when narrowed down to lymphoma it is difficult to provide a clinically meaningful subtype due to tumour heterogeneity and poor representation in fragmented needle core biopsies. Furthermore a diagnosis of benign inclusions as a mimic of metastatic tumour was not initially considered until after MDT discussion.

There are a number of case reports recognising the pitfalls of mesothelial inclusions mimicking metastatic carcinoma and diagnostic difficulties in interpreting limited or non-representative tissue sampled from sites poorly characterised by radiological or clinical examination.[4] Benign inclusions are foci of non-neoplastic ectopic tissue in lymph nodes and they are classified into three types: epithelial, nevomelanocytic and decidual. It is important to recognise and identify this benign entity and not mistake these appearances as metastatic tumour.[5]

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ERRATUM

The editor has been informed that there is an error in the following paper:

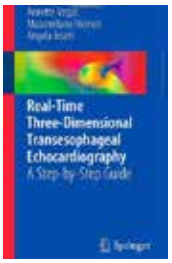
The fortunes of the legal and medical professions during the "Troubles" – Presentation to the Northern Ireland Medicolegal Society – October 14, 2014

Philip McGarry
Ulster Med J 2015; 84(2): 119 – 123,

Page 121 refers to Gordon Blair of the School of Dentistry – the correct name is George Blair. We apologise for any inconvenience caused.

Book Review

REAL-TIME THREE-DIMENSIONAL TRANSESOPHAGEAL ECHOCARDIOGRAPHY. A STEP BY STEP GUIDE.



Annette Vegas, Massimilano Meineri, Angela Jerath

Publisher: Springer, 2012. ISBN-13: 978-1-4614-0664.8. RRP £40.99

This is a richly illustrated reference book of 234 pages that has been condensed into a spiral-bound pocket book format that can sit on the patient's bed as you are performing a trans-oesophageal echo (TOE) study! The authors are anaesthetists based in Toronto General Hospital – a major Canadian cardiovascular centre.

Their cardiac surgical expertise is reflected in extensive sections on native and prosthetic valve assessment as well as transcatheter aortic valve replacement, inter-atrial septum occlusion, ventricular assist devices and cardiac masses.

The book is well suited for someone learning or performing TOE in a tertiary centre or referring patients to such a centre for cardiac valvular or device interventions.

The acquisition of images and image interpretation is well explained and there are extensive notes on the pathology of each disease as well as classifications of the different types of valves and devices with their characteristic findings on TOE. This extends to notes about the "washing jets" – small leaks associated with the movement of metallic valve leaflets that can be confused with paravalvular leaks by the unwary.

The book does not delve into post-processing of 3D images which can be time-consuming and frustrating, but the golden rule of post-processing is that you need good quality data in to get an excellent image out and the guidance offered in this book should help greatly with that.

I always take this handy pocket book into the echo lab during my TOE sessions – I can't think of a higher recommendation than that.

Dr John Purvis
Consultant Cardiologist